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**Embargo lifted on 9 April 2024 at 08:30**  
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- A world first in the form of a Chinese perpetual calendar programmed until 2200.
- 江詩丹頓推出世界上首枚可精準運行至 2200 年的中國曆法萬年曆時計
- A world record, with a total of 63 horological complications integrated into a timepiece that required 11 years of research and development.
- 時計歷經 11 年研製而成，憑藉 63 項鐘錶複雜功能創下世界紀錄
- A human adventure shared by three watchmakers and the commissioner, the same people behind the Reference 57260 watch presented in 2015.
- 新作集結了品牌於 2015 年打造出的曠世巨作 — 參考編號 57260 的三位製錶大師級原班人馬，應同一位鐘錶收藏家委託，再創非凡傳奇

**Vacheron Constantin presents the world's most complicated watch. Comprising 63 horological complications and 2,877 components, it surpasses the record already held by the Maison with Reference 57260. This world-first timepiece is distinguished by the fact that it features a genuine Chinese perpetual calendar. Given the particularities of this lunisolar calendar characterised by a complex and irregular cycle, the mechanical programming of in-house Calibre 3752 through to 2200 is a feat of horological genius. Stemming from 11 years of development, including a year entirely devoted to its assembly, Les Cabinotiers - The Berkley Grand Complication is a milestone in contemporary watchmaking history. Similar in design to the Reference 57260 presented in 2015, Les Cabinotiers - The Berkley Grand Complication was born from the will of the same commissioner who has chosen to give it his name.**

江詩丹頓推出全球迄今最複雜的時計傑作，融匯 63 項鐘錶複雜功能，機芯由 2,877 個精密零件構成，一舉超越品牌此前創下的世界紀錄。這也是世界上首枚真正具備中國曆法的萬年曆時計。考慮到這一陰陽合曆體系特有的不規則週期及其複雜變化，時計內部搭載的 3752 機芯採用獨特的機械構造，確保精準運行至 2200 年，彰顯出精妙非凡的製錶匠心。此枚時計歷經 11 年潛心研製，其中僅零件組裝就需花費整整一年的時間，最終造就這一當代製錶史上的里程碑傑作。其設計與 2015 年問世的參考編號 57260 有著異曲同工之妙，兩者均由同一位鐘錶收藏家委託打造。新作以該鐘錶收藏家的名字命名為 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶。

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## 1. VACHERON CONSTANTIN AT THE PINNACLE OF THE ART OF WATCHMAKING

### 江詩丹頓製錶藝術的巔峰詮釋

Creating the most complicated watch ever made is an art that Vacheron Constantin has cultivated since its origins in 1755. More than two and a half centuries of history have forged the character of a Maison whose underlying motivation is to constantly push the limits of feasibility. Les Cabinotiers - The Berkley Grand Complication is yet another demonstration of this approach. This timepiece with its 63 complications represents a technical feat that is further enhanced by its restrained, elegant aesthetic and impeccable level of finishing. It took the three watchmakers 11 years of development and a wealth of ingenuity to bring this horological marvel to fruition. The movement assembly alone was spread over 12 months, notably including a trial assembly – before the decorative finishing of the components – to ensure it ran smoothly. 打造史上最精巧複雜時計的雄心，源於江詩丹頓自 1755 年創立以來深厚的製錶藝術積澱。逾兩個半世紀的悠久歷史，塑造了品牌不斷挑戰極限、開拓無盡可能的獨特個性。全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶便再次詮釋了這一拓進精神。此枚融匯了 63 項複雜功能的時計傑作不僅蘊含精深技藝，亦展現出內斂優雅的設計美學與精湛的裝飾打磨細節。三位製錶大師歷時 11 年潛心研製，傾注非凡巧思，方才造就這一鐘錶傑作。其中僅機芯組裝便耗時 12 個月，在對各零件進行裝飾打磨之前還需先進行試裝，以確保機芯平穩運轉。

- An unprecedented total of 63 horological complications  
63 項複雜功能的空前組合

Double-sided Calibre 3752 comprises 2,877 components, 245 jewels, 31 hands and 9 discs. Complications covering the entire horological spectrum have been integrated into this calibre in their most accomplished form. The chronograph features a split-seconds function; the phases of the moons are extremely accurate, requiring no correction in 1,027 years; the Gregorian perpetual calendar is presented in accordance with the ISO 8601 standard; the small seconds are the retrograde kind, with compensation for the time required for the hand to jump back; the tourbillon has three rotational axes; the sky chart rotates according to the sidereal day (23h, 56m, 4.09s); the day/night indicator of the second time zone is engraved with an azimuthal polar projection providing an original geographical perspective.

這枚雙面錶盤懷錶搭載的 3752 機芯由 2,877 個零件組成，包括 245 顆寶石、31 枚指針和 9 個顯示盤。機芯幾乎囊括了高級鐘錶領域的各項複雜功能，將其以最精妙的形式融於一體。其中包括：追針計時；精密月相顯示，1,027 年內無需校正；格里高利萬年曆，以國際標準 ISO 8601 日曆模式讀取；逆跳小秒針，配備歸零時間補償機制；三軸陀飛輪；星空圖，以恆星日 (23 小時 56 分 4.09 秒) 為週期持續旋轉；第二時區晝夜顯示，視窗中飾有精心雕刻的極地方位投影圖，以獨特的地理視角呈現晝夜交替。

The 63 complications in this timepiece encompass the following categories:

- ❖ Time measurement and regulation: 9 complications
- ❖ Gregorian perpetual calendar: 7 complications
- ❖ Chinese perpetual calendar: 11 complications

- ❖ Chinese agricultural perpetual calendar: 2 complications
- ❖ Astronomical indications: 9 complications
- ❖ Split-seconds chronograph: 4 complications
- ❖ Alarm functions: 7 complications
- ❖ Grande Sonnerie: 8 complications
- ❖ Additional functions: 6 complications

時計中配備的 63 項複雜功能涵蓋以下類別：

- ❖ 時間顯示及調節功能：9 項
- ❖ 格里高利萬年曆功能：7 項
- ❖ 中國曆法萬年曆功能：11 項
- ❖ 中國農曆萬年曆功能：2 項
- ❖ 天文曆功能：9 項
- ❖ 追針計時功能：4 項
- ❖ 鬧鈴功能：7 項
- ❖ 大自鳴功能：8 項
- ❖ 其他功能：6 項

## II.THE FIRST CHINESE PERPETUAL CALENDAR

### 世界上首枚中國曆法萬年曆時計

With the alternation of day and night, the cycle of the seasons and that of the Sun and Moon, humankind became aware of the concept of time at a very early stage. It was however not until the advent of writing – in the fourth millennium BCE in the West and the second millennium BCE in China – that time became predictive. From then on, calculations based on astronomical observations could be used to develop a calendar. The ancients developed several calendar systems, based on the lunar months (Hegirian calendar), the solar year (Gregorian calendar) or a combination of the two, meaning lunisolar calendars incorporating the adjustments required to make them coincide. The Chinese calendar – like those of the Greeks, Hebrews and Celts – falls into the latter category.

從晝夜交替、四季更迭和日月輪轉中，人類很早便領悟到時間的概念。但直到書寫文字的出現（最早可追溯至西元前四千年），對時間的預測才成為可能。自那時起，人們便開始通過觀測天象來演算時間週期，在漫長的歷史中形成了不同的曆法體系。其中有些以月球週期為基準，稱為「太陰曆」（如伊斯蘭曆）；有些則基於太陽週期，稱為「太陽曆」（如格里高利曆，即西曆）；還有兼顧調和兩種機制的「陰陽合曆」，中國農曆、古希臘曆、希伯來曆和凱爾特曆均屬於最後一種類型。

- A complex and irregular system  
錯綜複雜的不規則曆法體系

Chinese calendar months are lunar and begin on the day of the new moon calculated on the 120<sup>th</sup> meridian east (UTC +8h) passing through the Shandong peninsula and the city of Hangzhou. In order to respect the average length of a lunation (29.53 days), they irregularly comprise either 29 or 30 days. In total, however, the 12 lunar months are 11 days shorter than a solar year (365.2422 days). For this reason, the Chinese calendar incorporates a 13<sup>th</sup> intercalary or embolismic month every two to three years, corresponding to

seven times over the Metonic cycle. The latter – named after the Greek astronomer Meton (5<sup>th</sup> century BCE) – refers to the 235 lunations occurring over 19 tropical years, at the end of which the two systems (lunar and solar) are perfectly synchronised (i.e. 6,940 days). Depending on the lunations, the common Chinese year can therefore have 353, 354 or 355 days and the embolismic year 383, 384 or 385 days. The other factor to be considered is the Chinese New Year of which the date marks the start of the lunar year yet fluctuates between 21 January and 21 February.

中國農曆的月份遵循陰曆，以月亮圓缺變化的週期(朔望月)為基準，每月以新月之日(朔日)為始，根據東八區(以貫穿山東半島和杭州的東經 120 度線為中線)標準時間計算。由於朔望月的平均週期為 29.53 天，因此每月的天數在 29 天和 30 天之間不規則交替。然而，12 個朔望月的總天數比一個太陽回歸年(365.2422 天)少 11 天。為此，中國農曆每隔兩至三年便在一年中增設一個月，增加的月份即為閏月，這與每 19 年置 7 個閏月的默冬週期(Metonic cycle)恰好呼應。默冬週期以其發現者、西元前 5 世紀古希臘天文學家默冬(Metion)的名字命名，以 235 個朔望月為一個週期，其長度與 19 個回歸年相當(即 6,940 天)，此時陰曆和陽曆再次完全同步。根據朔望月的變化，農曆平年為 353、354 或 355 天，閏年為 383、384 或 385 天。另一個需要考慮的因素是農曆新年，其日期在西曆 1 月 21 日至 2 月 21 日之間浮動，標誌著農曆年的開始。

The solar year in the Chinese calendar is a true tropical year, calculated on the same meridian (120<sup>th</sup> meridian east) between two winter solstices. It is divided into 24 periods of 15° each on the Sun's path along the ecliptic (the Sun's apparent annual path as seen from Earth). Each period, alternately known as *jie* (node) and *qi* (vital breath), lasts around 15 days, giving an average duration that fairly regularly corresponds to the Gregorian calendar, i.e. a year of 365 or 366 days.

中國農曆的年份則遵循陽曆，反映了太陽回歸年的週期，即以東經 120 度線為基準，兩個相鄰冬至的時間間隔。一年中共二十四節氣，指將地球視角的太陽周年視運動軌道(黃道)劃分為 24 個等份，每 15 度一等份，對應一個節氣，每個節氣持續約 15 天。如此一來，農曆年的平均長度恰好與格里高利曆相符，即一年 365 或 366 天。

Another feature of the Chinese calendar is that the units of time are numbered based on the association of two series of signs – 10 celestial stems and 12 earthly branches – yielding a possible total of 60 different combinations. This so-called sexagesimal cycle is most often used to mark the passing of years, but can also be applied to months, days or hours. The stems are also associated with the five elements (wood, fire, earth, metal, water) and with a polarity (yin, the feminine principle; or yang, the masculine principle). The branches are also represented by the 12 signs of the Chinese zodiac in the following sequence: rat, ox, tiger, rabbit, dragon, snake, horse, goat, monkey, rooster, dog and pig. At each stage of the calendar, the number of the stem and the number of the branch is incremented by one to create a cycle of 60 combinations corresponding to the lowest common multiple of 10 stems and 12 branches or animals of the zodiac.

中國農曆的另一特點是，時間單位的計量以「天干」和「地支」兩組符號表示。十天干與十二地支組成六十個計時序號，最常用於紀年，也可表達月、日、時的概念。天干還與五行(金、木、水、火、土)和陰陽屬性相關；地支與十二生肖對應：子鼠、丑牛、寅虎、卯兔、辰龍、巳蛇、午馬、未羊、申猴、酉雞、戌狗、亥豬。在這一曆法體系中，天干和地支的序號依次迴圈相配，以六十年為週期，即十天干和十二地支(或生肖)的最小公倍數，又稱六十甲子週期。

Lunisolar calendars play on complementarity. The system requires knowledge of the solar calendar to establish the dates of the leap moons and the beginning of the lunar years in order to achieve perfect synchronisation. Such was the aim of the Chinese, who ceaselessly improved their calendar so that it would reflect the reality of astronomical phenomena as closely as possible. The resulting accuracy is however a complexifying factor when it comes to modelling a system that is essentially characterised by its irregularity. While it is possible to program the calculation of the Chinese calendar since 1645 using analytical theories, as scientists have done, obtaining a concrete mechanical application represented an unfathomable challenge.

陰陽合曆講求互補。比如，必須參考陽曆體系來確定具體的閏月時間和農曆年的起始日期，以實現同步。為此，中國曆法經過不斷改進，力求盡可能貼合實際的天文現象。然而，對精確性的執著追求，亦使這一基於不規則週期的曆法體系尤為錯綜複雜。儘管科學家們已通過理論分析，實現 1645 年以來農曆計時的程式化，但要將其應用於精密的機械裝置中，挑戰難度不言而喻。

- A world first  
全球首創

The main innovation of Les Cabinotiers - The Berkley Grand Complication is its traditional Chinese calendar. It is the first watch to present it in the form of a perpetual calendar, with all the calculations, patience, ingenuity and understanding of Chinese culture that this implies.

全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶的創新之處主要體現為對中國傳統曆法的獨到詮釋。這是世上首枚中國曆法萬年曆時計，背後凝聚著製錶大師無比的細緻與耐心，飽含其精妙巧思和對中國文化的深入理解。

In concrete terms, the three watchmakers first had to model the calendar in algorithms. They then worked on transcribing them into a mechanism programmed until the year 2200 and capable of following the irregularities of a calendar whose years and lunar months have different durations on an irregular sequential basis, with a fluctuating first day of the year. To achieve this, they devised three mechanical 'brains' capable of controlling the cams and gears on one of the movement's two additional mechanisms on the front side. Broadly speaking, each of them "drives" one of the calendar's components: namely the lunar cycle, the solar cycle and the Metonic cycle. This latter cycle of 19 years – known as the golden numbers – can be read off on the 3 o'clock counter.

具體而言，三位製錶大師需首先構建中國農曆的演算法模型，再將其轉化為可自主運行至 2200 年的機械程式。其中必須考慮這一曆法體系的不規則性，包括不同年份和月份長度的不規則變化，以及歲首日期的浮動。為此，製錶大師在機芯正面另設了兩組機械裝置，由三個機械「大腦」分別控制機芯的三套凸輪和齒輪系統，各自驅動陰曆月週期、陽曆年週期和默冬週期。這款時計中 19 年默冬週期 (或稱金數) 的顯示區域位於 3 點鐘位置的副錶盤。

In addition to this feat of a watch programmed until the year 2200, Vacheron Constantin's watchmakers went so far as to offer a disc-type display of the exact – yet by definition variable – date of the Chinese New Year. This in itself represents another major accomplishment, as this key date in the nation's social life fluctuates continuously between January 21 and February 21.

除精確至 2200 年的機械「程式設計」外，江詩丹頓製錶大師還進一步施展精妙巧思，將作為中華民族社會生活重要節點的農曆新年日期呈現於圓盤顯示上，精準指示該日期每年在 1 月 21 日至 2 月 21 日之間的變化。

The front of the watch is essentially devoted to the various indications of the traditional Chinese calendar. To find one's bearings, one must first determine whether the current year is normal or embolismic (aperture at 11 o'clock) and whether the month is a short or long lunar month (aperture at 12 o'clock on the fixed New Year disc). This perpetual calendar bearing indications in Chinese characters includes a pointer-type date display on a 6 o'clock counter, along with aperture-type indications of the day at 8 o'clock and the month at 4 o'clock.

正面錶盤主要彙集了中國傳統農曆的各項曆法顯示。讀取時間時，需首先判斷當年為平年還是閏年（通過錶盤 11 點鐘位置的視窗顯示），當月是小月還是大月（通過新年日期固定顯示盤 12 點鐘位置的視窗顯示）。萬年曆資訊均以漢字標注，包括 6 點鐘位置的指針式日期顯示，以及分列於 8 點和 4 點鐘位置的視窗式星期和月份顯示。

Les Cabinotiers - The Berkley Grand Complication also indicates an unprecedented amount of information linked to the sexagesimal cycle, the keystone of the Chinese calendar and indeed of the entire Chinese cosmological model. This feat was rendered all the more impressive by the fact that the information shown relates to different time scales: the hour, the day and the year. Vacheron Constantin's watchmakers have integrated a jumping display of the 10 celestial stems, with their yin-yang polarity and associated elements (9 o'clock counter) for the day. The 3 o'clock counter shows the 12 earthly branches associated with the double hours, each day being subdivided into 12 two-hour segments, starting at 11 o'clock. The display here is continuous, over a 24-hour period. Finally, the silhouette of the Chinese zodiac animal for the current year appears in an aperture positioned below the moon phases. The combination of the animal and the celestial stem suggested on the New Year's disc gives the position within the sexagesimal cycle.

天干地支週期是中國曆法乃至整個宇宙觀的基石，全新時計中囊括了與之相關的豐富資訊，並極為精妙地涵蓋了不同時間尺度，包括時、日、年。9 點鐘位置的小錶盤以跳動方式顯示代表當天日期的天干及其對應的陰陽和五運屬性。3 點鐘位置的小錶盤則以持續運行的指針指示十二地支，表示十二個時辰。古代中國將一天分為十二個時辰，每個時辰相當於西曆的兩小時，以夜間 11 點為起始。月相盤下方的視窗呈現當年的生肖形象，結合新年日期盤中顯示的天干資訊，可判斷出該年在六十甲子週期中的排序。

As an essential complement to this Chinese perpetual calendar, the precision phases and age of the moon appear on the 12 o'clock counter, with no need for corrections over a full 1,027 years.

作為對中國曆法萬年曆資訊的重要補充，精密月相和月齡顯示位於 12 點鐘位置的小錶盤上，1,027 年內無需調校。

The final feature of this Chinese perpetual calendar is the caseback-side display – by a central hand – of the agricultural year's 24 solar periods, along with the month lengths, seasons, solstices and equinoxes.



最後，錶背以中央指針顯示農曆中的二十四節氣，以及月份長度、季節、冬夏二至點和春秋二分點。

### III. A HIGH-PRECISION ASTRONOMICAL AND CHIMING WATCH

#### 精準可靠的天文報時時計

Vacheron Constantin's watchmakers did their utmost to incorporate the full range of horology's noblest complications into this watch, be they in the realm of astronomical and chiming functions, as well as useful complications in terms of chronometry, alarms and time zones – all governed by a determination to achieve very high precision.

江詩丹頓製錶大師傾盡匠心，將高級鐘錶領域最超卓的複雜功能悉數融匯於此枚時計中。從精妙的天文和報時功能，到計時、鬧鈴和時區等各項實用複雜功能，均秉承對精準性能的崇高追求。

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- Astronomical indications and Gregorian calendars  
天文曆法顯示與格里高利曆

An astronomical watch par excellence, Les Cabinotiers - The Berkley Grand Complication also explores the vagaries of the Gregorian calendar. The latter is designed on a perpetual basis, i.e. until 2100, a non-leap secular year following the reform of the Julian calendar called for by the Council of Trent in 1582. Implemented by Pope Gregory XIII, this reform consisted of deleting 10 days to re-establish coincidence with the seasons. To avoid any further calendar drift, the decision was taken to eliminate three leap years in four centuries. Only those secular years whose year is divisible by 400 would remain leap years.

作為一枚精密的天文時計，全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶亦探索了格里高利曆的奧妙。時計具備格里高利萬年曆功能，可精準運作至 2200 年。根據 1582 年彌撒議會(Council of Trent) 要求開展的儒略曆改革，這一世紀年為非閏年。彼時，在教皇格里高利十三世(Pope Gregory XIII) 的推動下，從舊曆中刪去了 10 天，以確保與季節週期同步。為避免再次偏離，新曆決定每 400 年減少 3 個閏年，只有能被 400 整除的世紀年為閏年。

The Gregorian perpetual calendar is displayed on the watch's second face, built on one of the movement's two additional caseback-side mechanisms. The display comprises a retrograde date at 12 o'clock, complemented by the day of the week (9 o'clock counter), the month (3 o'clock counter) and the leap-year cycle (1 o'clock aperture). The Gregorian calendar has also served as the basis for another type of indication: since 1988, to avoid any confusion in international communications, the ISO 8601 standard has formalised numerical date formats for years (4 digits), months (1 to 12), weeks (1 to 52) and days (1 to 31 or 1 to 7). Les Cabinotiers - The Berkley Grand Complication thus incorporates the ISO 8601 calendar-week numeral pointed to by a hand (3 o'clock counter) with the day numeral in an aperture positioned above it.

格里高利萬年曆資訊顯示於背面錶盤上，由機芯背面兩組附加裝置的其中之一驅動該功能。各項顯示資訊包括 12 點鐘位置的逆跳日期，以及分別位於 9 點、3 點和 1 點位置的星期、月份和閏年

週期顯示。基於格里高利曆，時計還引入了另一套日期和時間的演示方法 — ISO 8601 國際標準。1988 年，為了避免在國際交流中引起混淆，此標準規定了年份 (四位數)、月份 (1-12)、周數 (1-52) 和日期 (1-31 或 1-7) 的數位格式。全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶中，ISO 8601 日曆周數由 3 點鐘位置的小錶盤上的指針指示，星期數字通過其上方視窗顯示。

The watch's astronomical references are not confined to calendars. Also visible on the back – fitted on this side of the movement's second additional mechanism– is a sky chart with the constellations appearing in real time as observed from Shanghai. For the sake of accuracy, this celestial disc makes one complete rotation in one sidereal day. Using a fixed star in the sky as a reference point, the time taken for the Earth to complete a full 360° rotation (sidereal day) is exactly 23 hours 56 minutes and 4 seconds. As the Earth both spins on its axis and revolves around the Sun, it takes around four minutes less than an average calendar day to return to its point of departure in relation to the given star. This sidereal time – that can be read counter-clockwise on the 24-hour circle with a scale bearing 15-minute graduations – is essential for correctly adjusting the sky chart. The map is marked with an off-centre ellipse to highlight the exact position of the constellations in the Northern Hemisphere at the time the watch is checked.

時計的天文功能並不局限於曆法顯示。錶背設有星空圖，由機芯背面第二組附加裝置驅動，即時顯示從上海觀測到的天穹星座。為確保精準度，星空圖圓盤完整旋轉一圈的時間為一個恒星日。以星空中的某一固定恒星為參照系數，地球自轉 360 度的時間，即一個恒星日的時間。由於地球同時自轉和公轉，以固定恒星為參照的情況下，恒星日比一個日曆日少約 4 分鐘，為 23 小時 56 分鐘 4 秒。此枚時計中，恒星時可通過帶有 15 分鐘刻度的 24 小時刻度盤以逆時針方向讀取，這一時間資訊對於星空圖調校至關重要。星空圖上的偏心式橢圓形圖案可在佩戴者通過懷錶觀測星位時，更精準地呈現星座在北半球星空的即時位置。

The equation of time completes the watch's astronomical indications. Given that the Earth's path around the Sun is not circular but elliptical and that the Earth's axis is inclined at a 24° angle to the plane of its orbit, the time between two solar zenith passages is not the same throughout the year. This difference between the (true) solar day and the (mean) 24-hour civil day ranges from -16 to +14 minutes depending on the time of year and is equivalent to zero just four times a year at the solstices and equinoxes. This information known as the equation of time – or time correction in astronomical parlance – is obtained by means of a cam that controls the display of this time differential. As well as marking the passage of the seasons, this revolution of the Earth around the Sun also determines the length of the day and night phases. Two counters (5 o'clock and 7 o'clock) display sunrise and sunset times, along with the length of day and night, consistently calculated with Shanghai as the geographical location.

錶背還設有時間等式顯示，進一步豐富時計的天文功能。由於地球公轉軌跡為橢圓形而非圓形，且地球自轉軸與黃道面之間有 24 度夾角，一年中太陽每天經過至高點的時間不固定。一年當中不同的時間段，太陽時 (真太陽時) 與 24 小時制標準時 (平太陽時) 之間的差距從 -16 分鐘到 +14 分鐘之間不等，兩者全年中僅四次完全相同，即二分二至日 (春分、夏至、秋分、冬至)。這一差值名為時間等式，在天文學領域則將其稱為「時間校正 (time correction)」。時間等式功能通過一枚凸輪控制。除了季節更迭外，地球公轉還決定著晝夜長短變化。錶盤背面的 5 點和 7 點鐘位置分別顯示日出日落時間和晝夜時長，以上海作為觀測基點計算得出。

- [Grande Sonnerie and alarms](#)
- [大自鳴和鬧鈴功能](#)

Grande Sonnerie timepieces are in a class of their own among musical timepieces because of their extreme complexity. Mastery of these watches – which strike the hour and quarters in passing with the hour repeating before each quarter in Grande Sonnerie mode and without repeating in Petite Sonnerie mode – has quite logically not become widespread given the high demands placed on the design of the strikework integrated into the movement. These range from the mechanism's safety features to the musicality of the sound sequences, not to mention energy management given the 912 hammer strikes in 24 hours. The world of chiming watches has been part of Vacheron Constantin's expertise since the very beginning, as evidenced by an order dating back to 1806 and referenced in the Maison's archives.

大自鳴時計的機械構造極為複雜，在樂音時計中獨樹一幟。大自鳴模式下，時計每逢整刻會依次完整報出小時和刻鐘；小自鳴模式下，整刻僅報出整刻時間，不會繼續報出小時。如今僅有少數製錶師能創作出大自鳴時計，因為要將報時機制融入機芯構造，設計必須極為精巧，確保機芯安全可靠、報時音序和諧悅耳，並且通過能量管理精準控制音錘每 24 小時敲擊音簧 912 下。自創立以來，江詩丹頓便在報時錶領域展現出非凡造詣。據歷史檔案記載，品牌首張報時錶訂單可追溯至 1806 年。

The Vacheron Constantin watchmakers were keen to equip Calibre 3752 with a Grande Sonnerie mechanism featuring a Westminster carillon. This chimes the tune sounded by the bells of Big Ben – on London's Tower of Parliament – in four bars of four notes played at different frequencies, punctuated by a fifth note for the hours. A total of five hammers and five gongs compose this chime, which can be heard at any time by activating the minute repeater lever positioned on the case middle at 6 o'clock.

在此枚時計中，江詩丹頓製錶大師傾注非凡巧思，為 3752 機芯配備西敏寺鐘聲大自鳴機制。西敏寺鐘聲 (Westminster chime) 是倫敦西敏寺英國國會大廈著名的大笨鐘 (Big Ben) 使用的報時樂曲，其報時鐘聲為四小節旋律，由四個不同頻率的音符組成。此外，這一大自鳴機制還會奏響第五種音符，代表小時。五組音錘和音簧鳴報出悠揚樂音，通過錶殼中層 6 點鐘位置的三問報時滑杆，即可啟動報時功能。

In "Striking" mode (as shown by a pointer-type selector at 10 o'clock on the front), the watch is automatically activated upon each passing of a new quarter-hour, like a clock. In "Night" mode, the alarm is deactivated between 10pm and 8am, according to a time slot chosen by the customer, to save energy as well as to ensure peace and quiet at night. The last mode dubbed "Silence" suspends the strikework completely. A second selector coaxial with the first enables one to switch from Grande Sonnerie to Petite Sonnerie mode, as desired. This strikework has its own barrel with a pointer-type power-reserve display at 9 o'clock.

正面錶盤 10 點鐘位置設有指針式選擇器，提供「報時」、「夜間」和「靜音」三種模式選擇。在「報時」模式下，時計會如時鐘一般，每逢整刻自動報時；在「夜間」模式下，根據收藏家選定的時段，時計在晚上 10 點至次日早上 8 點之間自動關閉報時模式，節省動力的同時，亦可營造出安心寧靜的夜間睡眠氛圍；在「靜音」模式下，報時機制則完全關閉。此外，時計還另設一個同

軸選擇器，用於切換大自鳴和小自鳴報時模式。這一報時機制配有獨立發條盒，動力儲存狀態通過 9 點鐘位置的指針顯示。

The watch's striking mechanism is complemented by an alarm. Activated by a dedicated slide on the case middle at 1 o'clock, it is set by the crown, with the alarm time displayed by an hours hand coaxial with the one showing the watch time (at 12 o'clock on the front). It has its own energy reserve with a dedicated barrel that is set by a movable crown housed in the case middle at 5 o'clock, another of the watch's technical subtleties. The alarm torque is displayed by a hand on the same counter as the mode indicator (1 o'clock on the front). In "Normal" position, the alarm sounds progressively on a dedicated gong with a different tone struck by a sixth hammer. In "Carillon" position, the alarm activates the Big Ben chime and sounds in Grande or Petite Sonnerie mode. For mechanical safety reasons, both the Grande Sonnerie mechanism and the alarm mechanism have a system for blocking the striking when the power reserve of their respective barrels is exhausted.

除報時裝置外，時計還搭載鬧鈴系統，由錶殼中層 1 點鐘位置的專用滑杆控制。鬧鈴時間通過表冠設置，鬧鈴時針位於正面錶盤 12 點位，與懷錶時針同軸。鬧鈴功能同樣由專屬獨立發條盒提供能量，通過錶殼中層 5 點鐘位置的旋鈕錶冠上鏈，再次彰顯出時計精妙的技藝內涵。正面錶盤的 1 點鐘位置以指針指示鬧鈴力矩，並設有鬧鈴模式顯示。其中，在「常規」模式下，每逢鬧鈴時間，第六個音錘便會敲擊專屬音簧，以漸進方式奏響獨特的單一音符；在「鐘聲」模式下，鬧鈴啟動後鳴奏出西敏寺鐘聲樂音，具備大自鳴和小自鳴兩種鳴音模式。為了確保機械裝置的安全性，大自鳴報時機制和鬧鈴機制均配備鎖定系統，當相應發條盒中的能量耗盡時，會自動關閉鳴報功能。

- Triple-axis tourbillon regulator
- 三軸陀飛輪調節裝置

This addition of astronomical and chiming complications should not detract from the watch's primary function, which is to display the time – or better still, to display the time in several time zones and even to measure short times. Les Cabinotiers - The Berkley Grand Complication fulfils all these functions with chronometric precision. The watchmakers devoted particular attention to the escapement and regulation system that controls the sequencing of the energy chain and, consequently, the precision of the gear train. As a result, they developed a triple-axis armillary tourbillon regulator, operating at a frequency of 2.5 Hz (18,000 vibrations per hour) and fitted with a spherical balance-spring. The name "armillary" refers to the work of Antide Janvier (1751-1835), astronomer and watchmaker by appointment to King Louis XVI, one of whose greatest masterpieces was the creation of a moving sphere featuring an armillary planetary gear system.

全新時計不僅具備精妙的天文顯示和報時複雜功能，在時間顯示這一基本功能方面亦飽含巧思，可同時精確顯示多個時區的時間，甚至實現短時計時。如此精密的計時性能，得益於獨特的擒縱和調速系統，其設計旨在有效調節能量傳輸節奏，確保輪系的精準運轉。為此，製錶大師巧妙地研製出配備球形擺輪游絲的三軸渾天儀式陀飛輪調節裝置，以 2.5 赫茲的頻率運行，每小時振動 18,000 次。「渾天儀式陀飛輪」的名稱源自法國天文學家、法國國王路易十六御用製錶大師 Antide Janvier (1751-1835 年) 的偉大發明 — 渾天儀，這是一種用於演示行星軌跡的旋轉球體。

With this type of construction, the escapement housed at the heart of the tourbillon takes up every different position in order to cancel out the effects of Earth's gravity on the movement's isochronism, which makes perfect sense for a pocket watch worn in a fixed position. This is further enhanced by the presence of a spherical balance-spring, whose performance is superior to that of flat balance-springs. The result is an extraordinary mechanical ballet visible on the back of the watch, with a tourbillon carriage of which the constantly rotating elements form Vacheron Constantin's Maltese cross emblem every 15 seconds. The result is also a high degree of precision in the operation of the complications, a feat in itself given the complexity of Calibre 3752.

在這一獨特構造中，陀飛輪中央的擒縱系統方位不斷轉換，以抵消地心引力對機芯等時性的影響，這一設計對於長期垂直放置的懷錶而言尤為重要。此外，陀飛輪還特別採用球形擺輪游絲，相較扁平游絲性能更優越。在時計背面，可盡情欣賞到陀飛輪曼妙的機械旋舞，隨著陀飛輪框架的持續旋轉，每 15 秒呈現一次品牌標誌性的馬耳他十字造型。在陀飛輪的調節下，各項計時複雜功能有條不紊地保持著高度精密的運作，考慮到 3752 機芯的複雜構造，這其中的技術成就足以令人稱歎。

- Precision display and split-seconds chronograph
- 精準時間顯示和追針計時功能

The time display is of the regulator type, with day/night indicators (1 o'clock on the front) and a 60-hour power reserve (3 o'clock). Historically, the precision clocks used to set watches in watchmaking workshops offered this type of dissociative display. In this model, the hours hand (12 o'clock counter on the front) is separate from the central minutes hand and the seconds hand (6 o'clock counter). To enhance this display, the watchmakers at Les Cabinotiers devised a retrograde seconds hand. Moreover, since this watch is clearly subject to the requirements of a high precision, they have equipped this retrograde mechanism with a sophisticated technical solution consisting of adding two cams to the mechanism in order to compensate for the time it takes for the seconds hand to return to the "0" position.

時間顯示位於正面錶盤，採用規範指針的三針一線指示方式，1 點和 3 點鐘位置分別設有晝夜指示窗和 60 小時動力儲存顯示器。三針分立的指示方式源於在傳統製錶工坊中用於校準時計的精密時鐘。全新時計以中央指針指示分鐘，時針和秒針則分別位於 12 點和 6 點鐘位置的小錶盤上。Les Cabinotiers 閣樓工匠部門的製錶大師還為秒鐘顯示引入了逆跳機制，採用精妙複雜的技術構造，通過增設兩個凸輪來補償秒針歸零所需的時間，令走時更加精準。

The watch's chronograph, accurate to the nearest fifth of a second thanks to the movement's 2.5 Hz cadence, features a split-seconds function. This enables intermediate (split) times to be measured by stopping the second central sweep-seconds hand, which "catches up" (hence the French name *rattrapante*) with the first one – and thus with the elapsed time – once it is restarted. To differentiate it from the Reference 57260 watch, which has a chronograph with two retrograde seconds hands, the watchmakers have opted for a more 'classic' configuration, with both seconds hands moving in the same rotational direction. Integrated into the movement's second additional mechanism on the front, this chronograph is controlled by three column-wheels and a horizontal clutch via the pushpiece housed in the crown. The pusher embedded in the case middle at 11 o'clock is used to restart the split-seconds hand. The

chronograph hours and minutes are indicated by hands on their respective counters at 3 o'clock (hours) and 9 o'clock (minutes) with a silver-toned colour code. On the front, the time indications appear in blue, while the Chinese calendar displays and the various chime functions are distinguished by golden tones.

由於機芯振頻為 2.5 赫茲，此枚懷錶的計時精度達 1/5 秒，此外還具備追針計時功能。這一裝置採用兩根中央掃秒針，通過掣停其中一根指針，可記錄兩根針之間的時間，停針重啟後，又會「追上」仍在運動的另一根指針。不同於參考編號 57260 的雙逆跳秒針設計，全新時計採用更為經典的雙秒追針機制，兩根計時秒針沿同一方向轉動。這一機制嵌入於機芯正面第二組附加裝置中，配備三個導柱輪和水平離合裝置，由集成在錶冠內的按鈕控制，重啟追針秒針的按鈕位於錶殼中層 11 點鐘位置。小時和分鐘計時盤分別設於正面錶盤的 3 點和 9 點鐘位置，以銀色指針指示。為與之區分，同樣位於正面的時間顯示指標呈藍色，中國農曆顯示和報時功能的指顯則為金色，確保各項顯示清晰易辨。

- Second time zone and world time
- 第二時區和世界時間

Astronomical yet also travel-friendly, the watch displays world time, a function visible on the back. A 10 o'clock aperture enables the wearer to select one of the 24 cities corresponding to the 24 time zones into which the Earth has been divided since the 1884 International Meridian Conference held in Washington. The city symbol appears with the time differential in relation to the Greenwich meridian, such as N.Y. GMT -5. Below, the 9 o'clock counter shows the hours and minutes over a 12-hour period in a second time zone, with the corresponding day/night indication at 11 o'clock. On closer inspection, the rotating disc used to distinguish between day and night is engraved with a polar azimuthal projection of the Northern Hemisphere. This makes it possible to see the Earth's global sunshine duration from a geographical point located in this second time zone.

此枚時計伴隨收藏家仰望蒼穹，亦縱行寰宇。背面錶盤顯示世界時間，通過 10 點鐘位置的視窗，可從全球 24 個城市中選擇任意一個城市時間。24 個城市分別代表 1884 年美國華盛頓國際子午線會議 (International Meridian Conference) 上確立的全球 24 個時區。城市縮寫旁邊標注有當地與格林威治標準時間的時差。例如「N.Y. GMT -5」代表紐約時間，比格林威治標準時間晚 5 小時。城市視窗下方，9 點鐘位置的小錶盤以 12 小時制顯示第二時區小時和分鐘。11 點鐘位置設有獨立晝夜指示窗，其中的旋轉圓盤上精心雕刻北半球的極地方位投影圖，由此可觀察到第二時區某一地點視角下的日照時長。

- Finishing and hand decorations
- 精緻的裝飾技藝及手工打磨

While Les Cabinotiers - The Berkley Grand Complication required years of development due to its sheer complexity, one must not overlook within this cycle the time devoted to decorating and finishing the 2,877 components, including the invisible convolutions of the mechanism, not to mention the case.

全新時計的複雜機制，固然需要歷經漫長的研發與探索，錶殼部件和機芯 2,877 個零件的裝飾打磨也極為費時，即使是隱而未現的細節亦飽含入微匠心。

This perfectly elegant 18K white gold case features polished bezels on both sides. The winding crown is complemented by an aperture on the case middle, protected by a sapphire crystal, providing a view of the crown's position when winding or setting the timepiece. On the front, the dial is composed of four subdials featuring different types of finish: opaline silver-toned on the main dial and sunburst on the auxiliary dials. The dial on the back of the watch features the same opaline hue.

錶殼以 18K 白金製成，正反兩面的錶圈均經過拋光處理，盡顯優雅格調。上鏈錶冠旁設有嵌入錶殼中層的藍寶石水晶視窗，以便在上鏈或調時過程中觀察錶冠的位置。懷錶正面，乳光銀色主錶盤與四個旭日紋副錶盤相得益彰；背面錶盤同樣呈乳光銀色，與正面主錶盤和諧呼應。

Equal care was devoted to the movement, whose golden colour on a frosted base adorned with a Côtes de Genève motif on the reverse is a challenge in itself, as the slightest mishandling of the decorated components leaves indelible marks. The watchmakers in charge of assembling the timepiece – and who also did most of the decoration – therefore had to be extremely meticulous. The result is a watch whose complexity contributes to its overall elegance and harmony.

機芯同樣經過精細的裝飾打磨。金色磨砂底板背面飾有日內瓦波紋，這項裝飾工藝難度極高，稍有不慎便會在零件表面留下無法磨滅的痕跡。研製和組裝時計的製錶大師亦負責大部分裝飾工序，整個操作過程必須格外謹慎。最終的時計作品飽含精妙匠心，彰顯出整體優雅和諧的風範。

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#### IV. A HUMAN ADVENTURE

##### 競巧天工

Comprising 63 horological complications, Les Cabinotiers - The Berkley Grand Complication – a watch bearing the Hallmark of Geneva – surpasses the record already held by the Maison with Reference 57260. Between these two timepieces lies an extraordinary human adventure between a collector passionate about the great achievements of traditional watchmaking and three watchmakers from Vacheron Constantin's Les Cabinotiers department.

全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶融匯 63 項鐘錶複雜功能於一身，一舉刷新了參考編號 57260 此前創下的傲人記錄，成為製錶史上最複雜的時計傑作，並經日內瓦印記認證。在這兩枚傳世臻作的背後，凝聚著一位鐘錶收藏家對傳統製錶藝術的真摯熱忱，以及江詩丹頓 Les Cabinotiers 閣樓工匠部門三位製錶大師與天工競巧的壯志。

- The patience and trust of a passionate enthusiast
- 蘊含收藏家委託的熱切期待、耐心與信任

The Reference 57260 and Les Cabinotiers - The Berkley Grand Complication watches first took shape in the mind of the same commissioner, an American businessman and philanthropist who owns a prestigious collection of pocket watches that he has patiently assembled over the last 50 years. A discerning connoisseur, he loves challenges and the first one he set for the Maison was that of the most complicated watch ever made, incorporating a Hebraic perpetual calendar. This kind of challenge is one that Vacheron

Constantin makes a point of taking up, having created some of the most accomplished Grand Complication watches in watchmaking history. For the three master watchmakers from the Maison's Les Cabinotiers department in charge of the project, such a commission represented the acme of their career, as well as a path strewn with obstacles. It took no less than eight years to bring Reference 57260 – presented in 2015 – to fruition.

參考編號 57260 和全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶由同一位美國商人暨慈善家委託訂製。半個世紀以來，這位獨具慧眼的鐘錶收藏家憑藉非凡耐心，將一系列懷錶臻作納入個人珍藏。他欣賞敢為不凡的挑戰，向江詩丹頓提出的首個挑戰便是打造當時世界上最精密複雜的懷錶，且必須具備希伯來萬年曆功能。憑藉此前創製過諸多精妙超卓複雜功能時計的超凡積澱，江詩丹頓欣然接受了這一挑戰。Les Cabinotiers 閣樓工匠部門的三位製錶大師受命負責這一訂製項目，這是他們邁向製錶生涯巔峰的一場探索之旅，但必須踏過滿路荊棘。歷經長達八年的潛心鑽研，參考編號 57260 最終於 2015 年矚目問世。

United in complexity and in a relationship of mutual trust, the client and the three watchmakers in charge of this timepiece had found common ground, with the former's patience strengthened by these specialists' ingenuity. Nurtured by the client's trust in the expertise of Vacheron Constantin's watchmakers, this community of spirit led to a sequel – as even before the Reference 57260 watch was completed, its non-identical twin was commissioned. This time, instead of the Hebraic calendar, the idea was to incorporate a Chinese perpetual calendar. *“The result is a true horological masterpiece and the World's most complicated timepiece”* commented Mr Berkley. *“It is unlikely any other Maison would have been prepared to undertake such a Herculean challenge.”*

秉承對於複雜製錶藝術的共同熱情，收藏家與製錶大師之間建立了深厚的默契和互信。三位大師的獨到巧思與超凡造詣，也令收藏家對整個研製過程更富耐心。正是出於這一心靈共鳴，以及對品牌製錶大師精湛技藝的信任，在參考編號 57260 尚未完成時，收藏家便決定再訂製一枚有著異曲同工之妙的序章之作，但由希伯來曆改為中國農曆萬年曆功能。正如 Berkley 先生所言：「這枚新作是一枚當之無愧的鐘錶傑作，也是迄今世界上最精妙複雜的時計。我想，當今沒有任何一家其他製錶品牌能夠完成如此艱巨的挑戰。」

- Doing better than possible
- 精益求精

The commissioner of this timepiece is clearly one of those passionate clients, such as Henry Graves Jr. or James W. Packard, who envision pushing the limits of feasibility. Appreciating challenges, they provide a Maison like Vacheron Constantin with the opportunity to progress, to question itself and to evolve. Through this timepiece and its clearly stated name, Vacheron Constantin pays a vibrant tribute to this great collector, who also owns the Vacheron Constantin pocket watch presented in 1946 to King Farouk I of Egypt.

委託打造此枚新作的客戶與美國著名鐘錶收藏家、銀行家 Henry Graves Jr.和汽車製造商 James W. Packard 等前輩一樣，也對挑戰製錶極限懷有熱切嚮往。他們的慷慨支持推動著江詩丹頓如此精湛的製錶品牌提供了超越自我、不斷拓進的契機。正如時計之名所示，江詩丹頓以此枚傑作致敬這



位品味非凡的鐘錶收藏家。他的藏品還包括品牌 1946 年呈獻給埃及國王法魯克一世 (King Farouk I) 的古董懷錶。

With both patience and tenacity, in keeping with the Maison's enduring mission to always do better than possible, the same three watchmakers from its Les Cabinotiers department continued the adventure alongside the commissioner, embarking upon a new 11-year epic. Resting on their laurels was out of the question, meaning they never stopped rethinking the functions and systems of the 2015 movement with the aim of improving it, optimising it or proposing different displays. The result is Calibre 3752, a double-sided mechanical marvel comprising 2,877 components.

秉承精益求精的品牌信念，Les Cabinotiers 閣樓工匠部門的三位製錶大師以超凡耐心和不屈毅力，攜手委託收藏家再度展開一段歷時 11 年的史詩式探索之旅。他們並不滿足於複製過往成就，而是對參考編號 57260 中機芯的各項功能和機制予以重新構思，探索更精妙的機械構造和獨特的顯示設計，最終成功打造出由 2,877 個零件組成的 3752 雙面機械機芯。

Such optimising also implied innovating, given that no solution had ever yet been found for translating the complexity and irregularity of the Chinese calendar into cams and gears forming a perpetual horological configuration. Vacheron Constantin's three watchmakers took on this "*Herculean*" task, perpetuating the Maison's time-honoured tradition of exclusivity and expertise in the service of the most demanding watchmaking requirements.

機芯中凝聚創新巧思，以複雜的凸輪和齒輪體系構成精密的中國曆法萬年曆裝置，首創先河地精準呈現中國農曆的不規則週期和複雜變化。在這項艱巨挑戰中，江詩丹頓三位製錶大師延續品牌訂製時計的超卓傳統和精深造詣，致力將鐘錶收藏家對於至臻時計的期待變為現實。

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## **V. INTERVIEW WITH CHRISTIAN SELMONI, STYLE & HERITAGE DIRECTOR**

與江詩丹頓風格及傳承總監 Christian Selmoni 先生對談

### **What is your overall impression of this watch?**

I have boundless admiration for the complexity of this timepiece, its level of finishing and its precision, given the 63 complications. It is the epitome of hyper-horology, stemming from years of effort and ingenuity. After Reference 57260, one might have thought it represented the 'last word' in this field. As we can see, it is possible to take demands a step further by achieving what no one has ever managed before, namely a Chinese perpetual calendar without any correction until 2200.

### **您對這枚懷錶有何整體評價？**

這枚懷錶採用複雜精密的機械構造，將 63 項複雜功能融於一身，確保其精準性能的同時，並飾以精湛的裝飾打磨細節，令人讚歎不已。時計歷經多年研發，凝聚非凡創想，堪稱超卓製錶藝術的典範。自問世以來，參考編號 57260 或許被許多人視作這一領域的巔峰之作，但如今，江詩丹頓以全新傑作再次拓入無人能及的製錶疆域，打造出真正具備中國曆法萬年曆功能的時計，並在 2200 年之前無需再作調校。

### **Can you give us more details about this calendar?**

The three watchmakers in our Les Cabinotiers department – who worked for 11 years on this timepiece – succeeded in modelling this extremely complex calendar. By that, we mean translating it and transcribing it into algorithms that can then be applied mechanically. In concrete terms, this translates into three mechanisms – which our watchmakers like to call "brains" – that control the calendar's different variables: its 19-year Metonic cycle ; the New Year dates; its sexagesimal cycle of 60 combinations; and finally its solar agricultural cycle of one tropical year. Combining these elements results in a Chinese perpetual calendar whose difficulty lies not only in its irregularity but also in these different cycles. A veritable feat of innovation.

### **您能否詳細介紹一下這項萬年曆功能？**

歷經 11 年鑽研與摸索，江詩丹頓 Les Cabinotiers 閣樓工匠部門的三位製錶大師成功構建出中國農曆的演算法模型，再將其轉化為精妙的機械程式，以精準呈現這一極為複雜的曆法。具體而言，製錶大師將其分解成三組機械裝置，三個機械「大腦」分別控制這一曆法體系中的各項變數，即：19 年默冬週期，帶農曆新年日期顯示；天干地支六十甲子週期；以及以太陽回歸年為基準的農曆年週期。不同週期的融合及其中的不規律性，正是中國曆法萬年曆機制研發工作中的主要挑戰，而這三組裝置則為此提出了創新的解決方案。

### **Speaking of innovation, the Reference 57260 has been the subject of around ten patent applications.**

#### **What about this The Berkley Grand Complication watch?**

No patent has so far been filed for this model, for a very simple reason: the watchmakers at Vacheron Constantin did not wish to reveal how they managed to transpose the immense complexity of the Chinese calendar into a 'perpetual' horological configuration. When applying for patents, it is essential to give a very precise description of the innovation, including technical drawings, as well as to put the invention into perspective in relation to existing solutions. In other words, you are indeed protecting your invention, yet you are also providing the technical details.

提及創新，江詩丹頓曾為參考編號 57260 申請了大約 10 項技術專利。此次是否也為全新 Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶提交了專利申請？

目前，江詩丹頓尚未為此枚懷錶的技術發明申請專利，原因很簡單，中國農曆是一種極為複雜的曆法體系，品牌製錶師不希望公開其萬年曆機制的技術奧妙。如果申請專利，品牌必須提交技術圖紙等詳盡資料，並將這一創新機制與其它的現有機制進行對比。換言之，申請專利確實能夠保護發明成果，但也會將詳細的技術資訊公之於眾。

### **What technical solutions are also worth highlighting?**

The regulator-type retrograde seconds hand is one of them. While it's already rare to have a retrograde seconds hand on a watch, the watchmakers at Les Cabinotiers wanted it to be as accurate as possible. This meant compensating for the time taken for the seconds hand to return to its initial position. They achieved this by adding two extra cams to the mechanism. The "Night" function of the Grande Sonnerie is another. This mode suspends the alarm at night for a period of time of the customer's choosing, a novel feature. Among the many other technical developments, triple-axis armillary tourbillon deserves a special mention. Although it was already present in Reference 57260, it nonetheless represents a mechanical feat and makes perfect sense in the case of a pocket-watch which is by definition worn in a single position.

除了中國曆法萬年曆機制，這枚懷錶還有哪些技術亮點？

這枚懷錶的亮點之一是規範指針式逆跳秒針的設計。逆跳秒針在時計中本就罕見，Les Cabinotiers 閣樓工匠部門的製錶大師更是在這一精密機制中增設了兩個凸輪，以補償秒針歸零所需的時間，最大限度地提升這一顯示機制的精準性能。大自鳴報時功能的「夜間」模式也是一大亮點。在這一全新模式下，報時功能會在客戶選定的晚間時段內自動關閉。此外，三軸渾天儀式陀飛輪也是一項值得特別關注的技術成果。儘管這一裝置在參考編號 57260 中早已引入，但這仍是一項極為矚目的機械成就，對長期保持垂直狀態的懷錶而言具有重要意義。

### **You mentioned the level of finishing applied to the calibre. Could you elaborate?**

Hand finishing of movement components is one of the signature features of High Watchmaking and of Vacheron Constantin in particular, with techniques adapted to all the different types of surface: bevelling, rounding off, circular-graining, straight-graining, etc. While such operations already require perfectly mastered expertise for a simple movement comprising some 150 components, one can imagine what it represents with 2,877 components! What's more, this work goes completely unnoticed because this double-sided watch has no openwork on the movement apart from the tourbillon aperture. It is only when you open the watch that you realise the scale of the task. What's more, the three watchmakers who worked on this timepiece and produced most of the decoration did not take the easy way out. In fact, the calibre has a sand-blasted frosted finish that leaves no room for mistakes, as any untimely handling leaves indelible traces. It's therefore easy to see why this watch took a whole year to assemble.

您剛才提及了機芯的裝飾打磨，能否介紹一下細節？

機芯零件的手工裝飾打磨，是高級製錶的標誌之一，也是江詩丹頓的一項技術專長。品牌嫺熟掌握各項表面處理工藝，包括倒角和圓角打磨、圓形粒紋、直紋打磨等。即使是一枚只有約 150 個零件的簡單功能機芯，其裝飾打磨也需要極為高超的技藝，這枚由 2,877 個零件組成的機芯裝飾難度更是可想而知。但由於懷錶採用雙面錶盤設計，除陀飛輪視窗外，無任何開口顯露機芯的內部構造，因此只有打開錶殼，才能欣賞到其精細的裝飾打磨工藝。研製時計的三位製錶大師亦負責

大部分裝飾工序，他們對隱藏於內部的機芯並非僅僅是簡單處理，而是採用噴砂工藝賦予其磨砂質感，這一操作稍有不慎便會在表面留下無法磨滅的痕跡，因此僅時計組裝便耗時整整一年。

### **You also mentioned precision?**

This timepiece does not claim to be a chronometer, as it has not been tested by the COSC - Contrôle officiel suisse des chronomètres. In-house tests nonetheless showed that, Les Cabinotiers - The Berkley Grand Complication has a precision that exceeds COSC requirements, with a daily tolerance margin of -4 to +6 seconds. It is worth recalling in this context that this timepiece bears the Hallmark of Geneva, a guarantee of provenance, craftsmanship, reliability, expertise and precision. The Hallmark's criteria stipulate that the rate of the watch must vary by no more than one minute after seven days and this watch is well below this mark – which is quite remarkable, given its complexity.

### **能否再介紹一下這枚懷錶的精準性能？**

此枚懷錶並未送交瑞士官方天文台 (COSC) 檢測認證，因此並未將其稱作「天文台錶」。但據品牌內部檢測結果顯示，在啟動計時功能的狀態下，時計的日均誤差介乎於-2 秒至+2 秒間，而經認證的天文台錶的日均誤差範圍為-4 秒至+6 秒，因此該枚時計完全符合天文台錶認證標準。值得一提的是，Les Cabinotiers 閣樓工匠 - The Berkley 超卓複雜功能懷錶已獲得日內瓦印記認證，表明其產地、工藝、可靠性、製錶技藝和精準性能均得到認可。日內瓦印記認證標準規定，時計的 7 日誤差不超過 1 分鐘，而此枚懷錶的誤差遠低於這一數值。考慮到其複雜的功能機制，能實現如此精準的走時性能，實在是令人稱歎。

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## VI.- THE CHINESE CALENDAR FROM ITS ORIGINS TO THE PRESENT

### 中國農曆的起源與現況

- A Time-honoured dating system
- 歷史悠久的曆法體系

According to legend, Chinese astronomy dates back to the 61<sup>st</sup> year of the reign of the Yellow Emperor (Huangdi), i.e. 2637 BCE. This legendary monarch is said to have invented the Chinese calendar, which has been an attribute of emperors' sovereignty ever since. Emperors inaugurated their reigns with a new calendar, often different from the previous one. For practical reasons, historians had to devise a chronology based on a single origin, dating back to the reign of Huangdi.

在中國的古老傳說中，天文觀測傳統可以追溯至黃帝在位的第 61 年，即西元前 2637 年。據傳，中國首部曆法正是創始自這位上古帝王。曆法也由此成為了皇權的象徵，歷代君主在建立新朝後，大多會頒佈區別於舊朝曆法的新曆。為便於記錄和研究，歷史學家設計了一套統一的編年體系，以黃帝即位之時為起點。

The last alteration to the traditional Chinese calendar as we know it today goes back to the work of the Jesuit Adam Schall von Bell, Imperial court astronomer in Peking (now Beijing). In 1645, he incorporated his latest observations – true solar time – into the combination of a solar (agricultural) calendar and a lunar (civil) calendar representing the Chinese system. While China adopted the Gregorian calendar in 1912 and the Common Era in 1929, the traditional calendar still serves as the unavoidable benchmark for festivals celebrated throughout the country.

我們如今熟知的中國傳統農曆經過了歷代修訂與完善，其中曾任清廷御用天文學家的德國耶穌會士湯若望 (Adam Schall von Bell) 為最後一次修訂作出了卓著貢獻。1645 年，他將自己對真太陽時的最新觀測成果引入中國的農曆。在這一陰陽合曆體系中，陽曆主導農事安排，陰曆指引日常生活。此後，中國雖於 1912 年和 1929 年先後實行格里高利曆和西元紀年，但仍將農曆作為確定國家傳統節日的重要曆法依據。

- The principles behind the Chinese lunisolar calendar
- 中國陰陽合曆的基本原理
  - ❖ The 12 months are lunar. They begin on the day of the new moon and have 29 or 30 days to respect the average length of a lunation, which is 29.53 days.
  - ❖ The 11 days missing from the solar year are made up by an intercalary or embolic 13<sup>th</sup> lunar month every 2-3 years, i.e. 7 times in a 19-year cycle.
  - ❖ The solar 'periods' of the year correspond to 24 divisions of 15° each on the Sun's path along the ecliptic. Each period lasts about 15 days, giving an average duration that corresponds to the Gregorian calendar.

- ❖ The solar year begins at the winter solstice and has 365 or 366 days. The lunar year begins on the Chinese New Year – between 21 January and 21 February. Depending on the lunation, there are 353, 354 or 355 days in common years and 383, 384 or 385 days in embolismic years.
- ❖ The Chinese lunisolar calendar follows a 60-year sexagesimal cycle, composed of successive combinations of 10 celestial stems, associated with the five elements (wood, fire, earth, metal, water), and 12 earthly branches, associated with an animal: rat, ox, tiger, rabbit, dragon, snake, horse, goat, monkey, rooster, dog and pig.
- ❖ 12 個月份以月亮圓缺變化的週期 (朔望月) 為基準，每月以新月之日 (朔日) 為始。由於朔望月的平均週期為 29.53 天，每月的天數為 29 或 30 天。
- ❖ 由於 12 個朔望月的總天數比一個太陽回歸年少 11 天，每隔兩至三年在一年中增設一個閏月，即每 19 年置 7 個閏月。
- ❖ 一年共二十四節氣，將太陽周年視運動軌道 (黃道) 來劃分為 24 個等份，每 15 度一等份，對應一個節氣，每個節氣持續約 15 天。如此一來，農曆年的平均長度恰好與格里高利曆相符。
- ❖ 每個太陽回歸年以冬至為歲首，一年有 365 或 366 天。每個農曆年始於農曆新年，日期在西曆 1 月 21 日至 2 月 21 日之間浮動。根據朔望月的變化，農曆平年為 353、354 或 355 天，閏年為 383、384 或 385 天。
- ❖ 中國陰陽合曆遵循六十甲子週期，由十天干與十二地支迴圈組合而成。天干與五行(金、木、水、火、土)相關；地支與十二生肖對應：子鼠、丑牛、寅虎、卯兔、辰龍、巳蛇、午馬、未羊、申猴、酉雞、戌狗、亥豬。

## VII.- VACHERON CONSTANTIN'S MASTERY OF GRAND COMPLICATIONS

### 江詩丹頓的超卓複雜功能製錶造詣

At Vacheron Constantin, creating complicated watches for the most renowned clients is a tradition. 為尊貴客戶打造複雜功能時計是江詩丹頓一貫秉承的傳統。

Three of the most extraordinary watches of their time became precious possessions of two Egyptian kings – Fouad 1 and his son Farouk – and Count Guy de Boisrouvray. A fourth equally remarkable one was made to the specifications of the great collector James Ward Packard.

江詩丹頓曾推出三枚在當時堪稱舉世之作的精妙時計作品，分別被埃及國王弗阿德一世 (King Fouad I) 及其子法魯克國王 (King Farouk I)，以及法國 Count Guy de Boisrouvray 伯爵收為珍藏。品牌還曾應美國著名鐘錶收藏家 James Ward Packard 的委託，為其訂製一枚同樣精湛絕倫的時計傑作。

#### ❖ James Ward Packard (1918)

This 20K gold chiming pocket watch made its mark on the history of High Watchmaking. It includes a quarter and half-quarter repeater with Grande and Petite Sonnerie as well as a single-counter chronograph. Founder of the Packard Motor Company, James Ward Packard commissioned and acquired it in 1918.

#### ❖ James Ward Packard (1918 年)

此枚 20K 金質報時懷錶是高級製錶史上赫赫有名的傑作，集合了二問和半刻問報時、大小自鳴以及單按鈕計時功能。懷錶由美國派克汽車公司 (Packard Motor Company) 創始人 James Ward Packard 委託訂製，於 1918 年交付。

#### ❖ King Fouad 1 of Egypt (1929)

This large, highly complicated 18K yellow gold and enamel pocket watch is a chiming watch featuring a minute-repeater with Grande and Petite Sonnerie, equipped with three gongs and three hammers, as well as a split-seconds chronograph with a 30-minute counter, perpetual calendar and indication of the phases and age of the moon. It was presented to His Majesty King Fouad 1 of Egypt by the Swiss expatriate community in 1929.

#### ❖ 埃及國王弗阿德一世 (1929 年)

此枚以 18K 黃金和琺瑯打造的大尺寸懷錶設計極盡複雜，搭載採用三音簧三音錘結構的三問報時及大小自鳴功能，具備帶 30 分鐘計時盤的追針計時功能，以及萬年曆、月相和月齡顯示功能。時計於 1929 年由居住埃及的瑞士僑民團體獻給埃及國王弗阿德一世。

#### ❖ King Farouk 1 of Egypt (1946)

This extremely complex, very large 18K yellow gold pocket watch is a chiming model. It includes a minute-repeater with Grande and Petite Sonnerie, equipped with three gongs and three hammers, a split-seconds chronograph with a 30-minute counter, perpetual calendar, indication of the phases and age of the moon, alarm and two power-reserve indicators. It was presented to King Farouk I of Egypt by the Swiss authorities in 1946 and surpasses its predecessor in terms of complexity.

#### ❖ 埃及國王法魯克一世 (1946 年)

此枚以 18K 黃金打造的超大尺寸懷錶融匯多項複雜功能，包括採用三音簧三音錘結構的三問報時及大小自鳴功能，具備帶 30 分鐘計時盤的追針計時功能，萬年曆、月相和月齡顯示功能，以及鬧鈴功能，並配備兩個動力儲存指示器。時計於 1946 年由瑞士政府呈獻給埃及國王法魯克一世，比其父珍藏的懷錶更加精妙複雜。

❖ **Count Guy de Boisrouvray (1948)**

This pocket-watch with its large 18K gold hunter-type case includes a minute-repeater with three hammers striking three gongs, along with a perpetual calendar with leap-year and moon-phase indications, split-seconds single-counter chronograph and alarm. It was sold to Count Guy de Boisrouvray in 1948.

❖ **法國 Count Guy de Boisrouvray 伯爵 (1948 年)**

此枚大尺寸 18K 金質獵裝懷錶精妙非凡，具備採用三音簧三音錘結構的三問報時功能、帶閏年顯示的萬年曆及月相顯示功能、單計時盤雙秒追針計時功能，以及鬧鈴功能。懷錶於 1948 年售予法國 Count Guy de Boisrouvray 伯爵。

❖ **Reference 57260 (2015)**

Reference 57260 is a horological masterpiece uniting previously unimaginable technical complications. Eight years of development went into creating this timepiece. The watch is an entirely original creation with a total of 57 complications, including several unprecedented ones such as the first Hebraic perpetual calendar.

❖ **參考編號 57260 (2015 年)**

參考編號 57260 歷經八年時間研發而成，以完全原創的新穎巧思，超乎想像地將 57 項複雜功能集於一身，其中更有七項前所未有的鐘錶功能，包括品牌首創的希伯來萬年曆功能，堪稱是高級製錶的集大成之作。



## VIII.- Complications List

### 複雜功能列表

#### Time measurement (9)

1. Regulator-type hours, minutes and seconds for mean solar time
2. Retrograde second for mean solar time
3. Day and night indication for reference city
4. Visible spherical armillary tourbillon regulator with spherical balance spring
5. Armillary sphere tourbillon
6. World time indication for 24 cities
7. Second time zone hours and minutes (on 12 hours display)
8. Second time zone day and night indication
9. System to display the second time zone for the Northern or Southern hemispheres

#### 時間功能 (9)

1. 平太陽時規範指針式時針、分針和秒針
2. 平太陽時逆跳秒針
3. 設定城市晝夜顯示
4. 透過錶盤可見的球形渾天儀式陀飛輪調節器，球形擺輪游絲
5. 球形渾天儀式陀飛輪
6. 全球 24 個城市世界時間顯示
7. 12 小時制第二時區小時及分鐘顯示
8. 第二時區晝夜顯示
9. 南/北半球第二時區位置顯示系統

#### Gregorian Perpetual Calendar (7)

10. Gregorian perpetual calendar
11. Gregorian days of the week
12. Gregorian months
13. Gregorian retrograde date
14. Leap-year indication and four-year cycle
15. Number of the day of the week (ISO 8601 calendar)
16. Indication for the number of the week within the year (ISO 8601 calendar)

#### 格里高利萬年曆功能 (7)

10. 格里高利萬年曆
11. 格里高利星期
12. 格里高利月份
13. 格里高利逆跳日期
14. 閏年顯示及四年週期
15. 一周日數 (國際標準 ISO 8601 日曆)
16. 年度周數顯示 (國際標準 ISO 8601 日曆)

#### Chinese Perpetual Calendar (11)

17. Chinese perpetual calendar
18. Chinese number of the day
19. Chinese name of the month

20. Chinese date indication
21. Chinese zodiac signs
22. 5 elements and 10 celestial stems
23. 6 energies and 12 earthly branches
24. Chinese year state (common or embolismic)
25. Month state (small or large)
26. Indication for the Golden number within the 19-year Metonic cycle
27. Indication for the date of the Chinese New Year in the Gregorian calendar

#### 中國曆法萬年曆功能 (11)

17. 中國曆法萬年曆
18. 中國農曆月份日數
19. 中國農曆月份名稱
20. 中國農曆日期顯示
21. 中國農曆生肖
22. 五運與十天干
23. 六氣與十二地支
24. 中國農曆年份類別 (平年/閏年)
25. 中國農曆月份類別 (大月/小月)
26. 19年默冬週期金數顯示
27. 中國農曆新年日期在格里高利曆中的顯示

#### Chinese Agricultural Perpetual Calendar (2)

28. Chinese agricultural perpetual calendar
29. Indications of seasons, equinoxes and solstices with solar hand

#### 中國農曆萬年曆功能 (2)

28. 中國農曆萬年曆
29. 太陽指針指示季節、春秋二分點和冬夏二至點

#### Astronomic Calendar (9)

30. Sky chart (calibrated for Shanghai)
31. Sidereal hours
32. Sidereal minutes
33. Sunrise time (calibrated for Shanghai)
34. Sunset time (calibrated for Shanghai)
35. Equation of time
36. Length of the day (calibrated for Shanghai)
37. Length of the night (calibrated for Shanghai)
38. Phases and age of the moon, one correction every 1027 years

#### 天文曆功能 (9)

30. 星空圖 (按上海地方設定)
31. 恆星時小時
32. 恆星時分鐘
33. 日出時間(按上海地方設定)
34. 日落時間 (按上海地方設定)
35. 時間等式
36. 白晝時長 (按上海地方設定)

37. 夜晚時長 (按上海地方設定)
38. 月相及月齡，每 1,027 年僅需調校一次

#### Split-seconds Chronograph (4)

39. Fifths of a second chronograph (1 column wheel)
40. Fifths of a second split-second chronograph (1 column wheel)
41. 12-hour counter (1 column wheel)
42. 60-minute counter

#### 追針計時功能 (4)

39. 五分之一秒計時功能 - 1 個導柱輪
40. 五分之一秒追針計時功能 - 1 個導柱輪
41. 12 小時計時盤 - 1 個導柱輪
42. 60 分鐘計時盤

#### Alarm (7)

43. Progressive alarm with single gong and hammer striking
44. Alarm strike / silence indicator
45. Choice of normal alarm or carillon striking alarm indicator
46. Alarm mechanism coupled to the carillon striking mechanism
47. Alarm striking with choice of grande or petite sonnerie
48. Alarm power-reserve indication
49. System to disengage the alarm barrel when fully wound

#### 鬧鈴功能 (7)

43. 單音簧和音錘報時鬧鈴
44. 鬧鈴報時/靜音指示器
45. 常規鬧鈴或鐘聲報時鬧鈴選擇指示器
46. 與鐘聲報時機制連接的鬧鈴機制
47. 可選擇大自鳴或小自鳴的鬧鈴報時功能
48. 鬧鈴動力儲存顯示
49. 上滿鏈時脫離式鬧鈴發條盒

#### Westminster Carillon (8)

50. Carillon Westminster chiming with 5 gongs and 5 hammers
51. Grande sonnerie passing strike
52. Petite sonnerie passing strike
53. Minute repeating
54. Night silence feature (between 22.00 and 08.00 hours – hours chosen by the owner)
55. System to disengage the striking barrel when fully wound
56. Indication for grande or petite sonnerie modes
57. Indication for silence / striking / night modes

#### 西敏寺鐘聲報時功能 (8)

50. 五音簧和五音錘西敏寺鐘聲樂音
51. 大自鳴報時
52. 小自鳴報時
53. 三問報時
54. 夜間靜音功能 (晚上 10 時至早上 8 時之間 – 根據擁有者選擇訂製)

55. 上滿鐘時脫離式報時發條盒
56. 大自鳴或小自鳴模式指示
57. 靜音/報時/夜間模式指示

#### Additional features (6)

58. Power-reserve indication for the going train
59. Power-reserve indication for the striking train
60. Winding crown position indicator
61. Winding system for the double barrels
62. Hand-setting system with two positions and two directions
63. Concealed flush-fit winding crown for the alarm mechanism

#### 其他功能 (6)

58. 運轉輪系動力儲存顯示
59. 報時輪系動力儲存顯示
60. 上鏈錶冠位置指示
61. 雙發條盒上鏈系統
62. 雙位置和雙方向手動設定系統
63. 鬧鈴機制的隱藏式上鏈旋鈕錶冠

## IX. - Technical Data

### 技術規格

#### LES CABINOTIERS THE BERKLEY GRAND COMPLICATION Les Cabinotiers 閣樓工匠 The Berkley 超卓複雜功能懷錶

#### Reference

9901C/000G-B472  
Hallmark of Geneva certified timepiece

#### 型號

9901C/000G-B472  
經日內瓦印記認證的時計

#### Calibre

3752  
Developed and manufactured by Vacheron Constantin

#### 機芯

Mechanical, manual-winding  
72 mm (31 ½”) diameter, 36 mm thick  
Approximately 60 hours of power reserve  
2.5 Hz (18,000 vibrations/hour)  
2'877 components  
245 jewels  
3752  
江詩丹頓自行研發並製造

手動上鏈機械機芯  
直徑72毫米 (31 ½”法分)，厚度36毫米  
動力儲存約60小時  
振動頻率2.5赫茲 (每小時18,000次)  
2,877個零件  
245顆寶石

#### Caliber plates

Plate 152: Chronograph  
Plate 252: Gregorian perpetual calendar  
Plate 352: Chronograph & Chinese perpetual calendar  
Plate 552: Astronomic calendar

#### 機芯夾板

夾板152：計時  
夾板252：格里高利萬年曆  
夾板352：計時及中國曆法萬年曆  
夾板552：天文曆

#### Indications

Time functions  
Perpetual calendar function: Gregorian and Chinese  
Chinese agricultural perpetual calendar functions  
Astronomic calendar functions  
Split-seconds chronograph (3 column-wheels) functions  
Alarm functions

顯示功能	<p>Westminster Carillon striking functions  Additional features  時間功能  萬年曆功能：格里高利曆和中國農曆  中國農曆萬年曆功能  天文曆功能  追針計時 (3個導柱輪)功能  鬧鈴功能  西敏寺鐘聲報時功能  其他功能</p>
Case	<p>18K white gold  98 mm in diameter, 50.55 mm thick</p>
錶殼	<p>18K白金  直徑98毫米，厚度50.55毫米</p>
Dial	<p>Metal  Silvered opaline</p>
錶盤	<p>金屬  乳光銀色</p>
<p>Number of hands  指針數量</p>	<p>Front: 19 / back: 12  正面：19枚；背面：12枚</p>
<p>Accessories  配件</p>	<p>Delivered with a corrector pen &amp; a magnifying glass  配有一支校正筆和一枚放大鏡</p>
Additional Information	<p>Single-piece edition, crafted on demand  Total weight: 980gr</p>
其他資料	<p>獨一無二的特別訂製款  總重量980克</p>